R-36M / 15A14 / RS-20A - SS-18 mod.1-3 SATAN

DATA AS OF 2023 (standard replenishment)
Complex 15P014, missile R-36M / 15A14 / RS-20A - SS-18 mod.1-3 SATAN
Complex 15P014P
★★★★

Intercontinental ballistic missile (ICBM). The missile was developed by the Yuzhnoye Design Bureau (Dnepropetrovsk, General Designer - M.K. Yangel, from 01.10.1970 - V.F. Utkin). By the decision of the USSR Defense Council dated August 27, 1969 in Yalta, the design bureau's proposals were approved for the creation of modernized mortar-launched missiles - the 15A14 / R-36M heavy ICBM with installation in hardened OS-67 silos and the 15A15 / MR UR-100 light ICBM with installation in hardened OS-84 silos, as well as a combat railway missile complex with ICBMs.

The following main principles were used in the development of the project:
- development of an autonomous inertial control system based on an on-board digital computer (BDCM) and a complex of command instruments (CCI) with increased accuracy;
- creation of a multiple warhead (MIRV) with individual guidance of warheads to aiming points;
- creation of warheads with improved overall dimensions and ballistic characteristics, resistant to the damaging factors of a nuclear explosion (PFYAV);
– development of a system of means for overcoming enemy anti-ballistic missile defense (ABM), including false targets operable at all stages of the trajectory;
– operation of the missile at all stages in the transport and launch container (TLC), placement on the TLC of all equipment and apparatus necessary for combat duty and missile launch;
– mortar launch of the missile from the TLC, placed in a silo launcher with the launch of the first stage engines of the missile after its exit from the TLC.

On September 2, 1969, Resolution No. 712-247 of the CPSU Central Committee and the Council of Ministers "On the development and manufacture of the R-36M (15A14) missile system with entry into flight testing in 1971" was issued. The development of the complex with ICBMs was carried out by the following cooperation of enterprises:
- Yuzhnoye Design Bureau - the missile and the complex as a whole;
- KBEM and KBKhA - liquid-propellant rocket engine control systems of sustainer stages;
- Kharkiv Design Bureau of Electrical Instrument Making and NIIPM - control system;
- NPO Altai and TsNIRTI - KSP PRO; -
KBSM and TsKBTM - launch complex and silo;
- LNPO Soyuz - PAD;
- TsKBTM - KP;
- VNIIEF - BB charges.

At the first stage of designing the 15A14 missile, it was assumed that the same approach would be used on the sustainer stages as on the previously created missiles of the R-36 family - i.e. a high-altitude modification of the first stage engine was assumed to be used as the second stage sustainer engine. As a result of the design development of such a scheme (6-chamber propulsion system at the 1st stage and 2-chamber propulsion system at the 2nd stage), a decision was made to use a combined propulsion system developed by KBKhA with a cruise and steering liquid-propellant rocket engine at the 2nd stage (*source - Rachuk*).

In December 1969, a preliminary design of the 15A14 ICBM with 4 types of warheads was prepared: light and heavy single-warhead warheads, multiple MIRVs, and a maneuvering warhead. In March 1970, the preliminary design of the 15A14 ICBM was accepted (*source: Zadontsev*). In August 1970, a proposal was approved to develop a missile system with highly protected silos. In January 1971, experimental throw-out launches from the TPK began at a test site near Pavlograd (*see below*).

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pr.11711 - IVA
Rishat 2024-09-0
pr.11711 - IVA

Launch of 15A14 ICBM with heavy mono-warhead, processed by MilitaryRussia

Author: DIMMI Created: 06.09.2022 22:34:25 Comments: 3 READ THE FULL ARTICLE

9K52 Luna-M - FROG-7

DATA FOR 2023 (standard update)
Complex 9K52 "Luna-M", rocket 3P11/9M21/P-65 - FROG-7A
Complex 9K52 "Luna-M", rocket 9M21-1 / R-70 - FROG-7B
Complex 9K53 "Luna-MV" (helicopter), missile 9M21
Complex 9K52M "Luna-3"
★★★★

Tactical missile system. Resolution No. 247-104 of the USSR Council of Ministers on the creation of the system was issued on March 16, 1961. Developer: NII-1 (since 1967 - Moscow Institute of Thermal Engineering, Chief Designer - N.P. Mazurov) together with OKB-329 GKAT. The first launch of the experimental 3R11 / 9M21 missile with a range launcher took place on December 27, 1961. Range tests of the system with the 9P113 SPU - 1964 (Rzhevka range).

Based on the test results, the 9K52 system was accepted into service on August 6, 1964, serial production of the SPU was launched at the Barrikady plant and the system began to be delivered to the troops. In 1964, the 3rd Central Research Institute of the USSR Ministry of Defense prepared firing tables for the Luna-M system. In 1968, under the same designation 9M21, the missile of the complex was replaced by a modernized version of the missile - R-70 (9M21F1 and other models of the 9M21-1 type).

The complex has been decommissioned since 1986 (according to Western data).

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pr.11711 - IVA
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Rishat 2024-08-2
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Rishat 2024-08-1
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Rishat 2024-08-0
Historical pho
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Rishat 2024-08-0

Launcher 9P113 with 9M21 missile of the 9K52 "Luna-M" FROG-7 complex of the Syrian armed forces, photo probably from 2012-2013 (source).

Author: DIMMI Created: 13.04.2009 23:56:36 Comments: 157 READ THE FULL ARTICLE

Complex 9K720 Iskander - SS-26 STONE

DATA FOR 2023 (standard update, v.2)
Complex 9K715 "Iskander", missile 9M723 - SS-X-26 STONE
9K720 Iskander-M complex, 9M723-1 missile - SS-26 STONE-A
9K720E Iskander-E complex, 9M723E missile - SS-26 STONE-B
9K720 Iskander-M complex, 9M728 / R-500 ("Iskander-K") missile - SS-26 STONE-S
★★★★★

Operational-tactical missile system / multipurpose modular missile system of the ground forces. The development of the system was carried out using the developments of the Tochka , Oka , Oka-U and Volga systems . It is also likely that the system was created taking into account the Volna research and development work on the study of the concept of a multipurpose modular missile system for the ground forces. The origins of the system's development date back to the Iskander research and development work, which has been conducted since 1978. The research and development work included studying the possibility of placing two 9M79 Tochka class operational-tactical missiles on a self-propelled launcher similar to the 9K714 Oka system's self-propelled launcher. The main goal is to create an operational-tactical missile with a range of up to 400 km to replace the 9K72 system with an 8K14 missile with increased combat performance, as well as to ensure guaranteed destruction of particularly important targets with two missiles. According to unconfirmed data, the Iskander R&D was discontinued in the first half of the 1980s at the stage of developing the missile aiming and control systems.

The development of the Iskander complex in its original form was started at the Machine-Building Design Bureau (Kolomna, hereinafter referred to as KBM) on its own initiative by order of Chief Designer S.P. Nepobedimy and under his leadership in 1987. KBM's competitor in developing the new generation of operational-technical systems was the Tula Instrument-Making Design Bureau under the leadership of A.G. Shipunov, which proposed its own project . The USSR Council of Ministers issued a resolution on financing the design work for the complex in 1988. When creating the complex, the task was set to ensure interaction as part of the RUK Ravenstvo with the M-55 target designation aircraft (developed by RUK - NIIEMI). The original project may have planned to use the 9P76 SPU with one missile. The command post of the RUK "Equality" was designed on the MAZ-543 chassis (the command post is similar to the command post of the "Polyana").

Special thanks to missile veterans "Pensioner" (http://russianarms.ru), "Lyubitel" (http://paralay.iboards.ru) and others for their help in preparing materials and to user "Sluchayny" from the forum http://militaryrussia.ru for unique photo materials.

Self-propelled launcher 9P78-1 of the 9K720 Iskander-M missile system with a 9M723 missile during missile brigade exercises in Primorye, November 14-18, 2016 (http://smitsmitty.livejournal.com/).

Author: DIMMI Created: 20.09.2014 19:47:10 Comments: 0 READ THE FULL ARTICLE

Gnome (project)

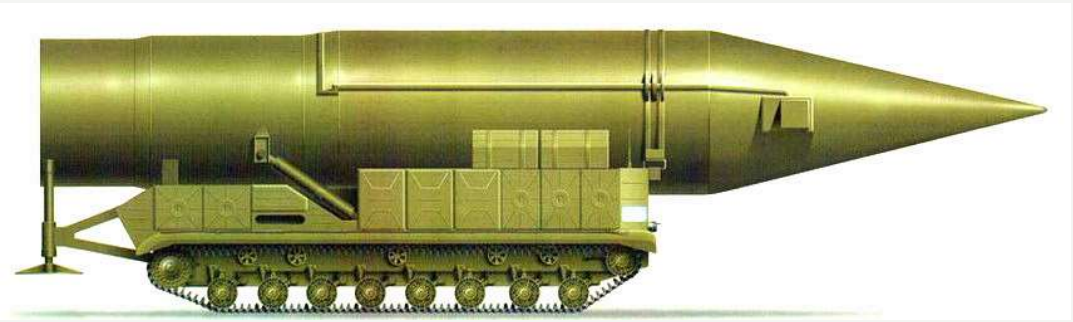
DATA AS OF 2023 (standard replenishment)
"Gnome"
★★★

Intercontinental ballistic missile (ICBM). Work on mobile solid-fuel strategic missiles was initiated by D.F. Ustinov. NII-1 (MIT) and OKB-586 (Yuzhnoye Design Bureau, Dnepropetrovsk) together with SKB (KBM, Kolomna) were involved in the design of the systems on a competitive basis. SKB (KBM) was responsible for the development of the missile's solid-fuel engine. After the ramjet was selected as the 1st stage engine, OKB-586 refused to participate in the project due to the non-standard nature of such a solution for a long-range missile. Further research and development work on the creation of an ICBM with a ramjet at the first stage was carried out independently by the SKB Machine-Building Design Bureau (Kolomna) since 1964. The General Designer was Boris Ivanovich Shavyrin (later - S.P. Nepobedimy).

For pilot production on the "Gnome" project, KBM was allocated Plant No. 92 in Gorky. Until October 1965, fire tests (more than 10) of a reduced prototype of the missile's ramjet (1/3 the size) were conducted at the TsIAM test site in Turaevo. Special equipment was mounted on the air injection stand. A total of more than 10 fire tests of the engine were conducted.

Plant No. 92 was producing engine sections and the Design Bureau was preparing to assemble the first full-size model of the missile. By October 1965, a preliminary design for the complex and the missile was developed. On October 16, 1965, the first fire test of the ramjet prototype took place at the TsIAM stand in Turaevo. After October 1965, under the leadership of S.P. Nepobedimy, the missile was reconfigured and R&D work on the creation of an ICBM was started. The draft design was successfully defended, and the release of working drawings of the missile began.

According to some sources, the development of the missile and the complex was stopped at the end of 1965 before the product entered flight tests. According to information in the memoirs of the design bureau, in 1967 at a meeting of the Military-Industrial Commission under the USSR Council of Ministers, a decision was made to close the Gnome project.



Self-propelled launcher type SM-SP21 for ICBM "Gnome" (http://www.razlib.ru/ , processed).

Author: DIMMI Created: 12.04.2014 00:22:18 Comments: 8 READ THE FULL ARTICLE

Trajectory Features of the New 9M723 Iskander-M Missiles

When launching ballistic (aeroballistic) missiles of the 9M723 type of the Iskander-M complex, different types of flight trajectories can be observed. Most often, these are ordinary classic trajectories, but starting in August 2020, evidence began to appear that the trajectories of Iskander-M missile launches, for example, of the "model 9M723 model 2016" type, may be somewhat unusual.

Missile type 9M723, 2016 version (video footage from Youtube).

It is quite possible that the latest modifications of the 9M723 missiles use more advanced missile control systems that can provide a wide range of trajectory options for different missile use scenarios - from classic ballistic (No. 1 in the figure below) to flat (No. 3) and high steep trajectories for short-range firing (No. 2). This short note is an attempt to explain the use of one or another trajectory option.

Launch trajectory of 9M723 missiles of the Iskander-M complex, video of the Russian Ministry of Defense, 05.08.2020

Author: DIMMI Created: 27.03.2023 22:25:24 Comments: 0 READ THE FULL ARTICLE

MIOM 15M69 / 15M69M

DATA AS OF 2023 (standard replenishment)
Unit 15M69 MIOM
Unit 15M69M MIOM-M
★★★

Engineering support and camouflage vehicle (MIOM) of the engineering units of the Strategic Missile Forces. The unit was developed and is produced by the Titan Central Design Bureau (Volgograd). It performs its tasks as part of the Yars or Topol-M PGRK, as well as independently. MIOM 15M69 was accepted into service and has been supplied to the Strategic Missile Forces since 2009. By July 2012, the engineering units of the Teikovo missile formation were fully equipped with such units. In the future, MIOMs will be supplied to the Irkutsk and Novosibirsk missile formations of the Strategic Missile Forces.

According to the report on the website of the Russian Ministry of Defense, in December 2012, successful State tests of the modernized MIOM-M vehicle were conducted at the 1st State Test Site of the Russian Ministry of Defense (Plesetsk Cosmodrome). The MIOM was modernized in several areas — both the units of the unit itself (gearbox, electrical installation) and the simulation tools used — inflatable mock-ups for various purposes will be used on the vehicle. The first samples of MIOM-M vehicles were delivered to the Teikovo Missile Force in January-February 2013.

One of the first photos in the media of MIOM 15M69, published in April 2011 (http://pressa-rvsn.livejournal.com).

Author: DIMMI Created: 08.10.2012 13:34:38 Comments: 3 READ THE FULL ARTICLE

ASBU Signal (1st generation ASBU)

DATA AS OF 2023 (standard replenishment)
ASBU "Signal" (1st generation ASBU)
★★★

Combat control system of the Strategic Missile Forces of the 1st generation. The lead developer of the system is NII-101 GKRE under the Council of Ministers of the USSR, the chief designer is V.Ya. Kravets (since May 1963 - V.S. Semenikhin) . Due to the increased requirements for the ACS "Signal", the development of its equipment was assigned on a competitive basis to the OKB of the Leningrad Polytechnic Institute (LPI, later - NPO "Impulse", chief designer T.N. Sokolov).

Historical background :
The first missile units were controlled by the Commander and Staff of Artillery of the Soviet Army (1946-1955). With the strengthening of the role of missile technology in 1955, the Headquarters of Rocket Units was created, which was subordinate to the Deputy Minister of Defense of the USSR for special weapons and rocket technology. By 1959, the Headquarters of Rocket Units had accumulated experience in controlling missile units and with the formation of the Strategic Missile Forces (SMF) in 1960, the prerequisites for the creation of a control system were formed, which included control bodies and points at the strategic, operational and tactical levels, automated control systems and communication systems. The main control body of the SMF became the Main Staff of the SMF. Typical technologies of that time were used to transmit control commands - telephone, telegraph, teletype. In August 1960, under the leadership of the Chief of the General Staff of the Missile Forces, Colonel General M.A. Nikolsky conducted an exercise with one of the missile divisions, which showed the need for urgent development and implementation of automated control means, especially in the link of the central command post of the missile forces - the regiment. On January 15, 1960, the 6th department (automation of troop control) was created in the Operational Directorate of the General Staff of the Strategic Missile Forces, consisting of 5 officers and 2 employees. Colonel M.Z. Kuzmin was appointed head of the department.

Statement of the task of developing an automated control system :
In 1961, the Operational Directorate of the General Staff of the RV, together with the Research Institute-4 of the Ministry of Defense, developed the principles of constructing a system for the automated transmission of orders for constant combat readiness and the collection of reports with their visual display. In early 1962, the Research Institute-4 of the Ministry of Defense manufactured experimental samples of the main control links, which were tested in the troops. In the same year, the first tactical and technical requirements for the development of the Signal system were developed and issued to the industry, approved by the Commander-in-Chief of the Missile Forces, Marshal of the Soviet Union S.S. Biryuzov. An active role in this work belonged to the head of the 6th automation department, Colonel M.Z. Kuzmin, and the department officer, Captain A.S. Dubovitsky. Based on the tests of experimental samples of the equipment, on September 29, 1962, the CPSU Central Committee and the USSR Council of Ministers adopted a Resolution on the development of an automated control system for the Strategic Missile Forces (code "Signal"). The lead developer of the system equipment was determined to be the Research Institute-101 of the State Commission for Radio Electronics and Electronics of the USSR Council of Ministers, and V. Ya. Kravets was appointed chief designer of the system (since May 1963 - V. S. Semenikhin, Research Institute-101) . Research Institute-4 of the Ministry of Defense became the lead contractor for the development of the communication system for the Signal automated control system and documents on its combat use. To supervise the development and manufacture of the system equipment, a department of automated control systems was created within the Main Directorate of Military-Engineering Defense (head of department, engineer-colonel A. N. Sapozhnikov). The co-contractor for the development of information-logical devices (ILU) for the ACS control links on a competitive basis was the LPI Design Bureau (chief designer of the ILU and deputy chief designer of the ASBU - T. N. Sokolov).

Remote control panels of the Strategic Missile Forces combat control system "Signal-A" (source)

Author: DIMMI Created: 22.12.2022 13:02:58 Comments: 1 READ THE FULL ARTICLE

9K72 / R-17 - SS-1C/D/E SCUD-B/C/D - status, export, sources

DATA FOR 2023 (standard update)
9K72 / R-17 - SS-1C/D/E SCUD-B/C/D
9K72 / R-17 - SS-1C/D/E SCUD-B/C/D - Complex infrastructure, projections
★★★★★

Hwasong-5 missile on a 9P117M SCUD-B type SPU at a parade in Pyongyang, April 15, 2012 (photo from the Boaz Guttman archive, http://www.flickr.com

Author: DIMMI Created: 20.04.2009 19:43:08 Comments: 55 READ THE FULL ARTICLE

UR-200 / 8K81, UR-200A / 8K83 - SS-X-10 SCRAG

DATA AS OF 2023 (standard replenishment)
R-200 / UR-200 / 8K81 - SS-X-10 SCRAG
Missile UR-200A / 8K83 Missile
★★★★

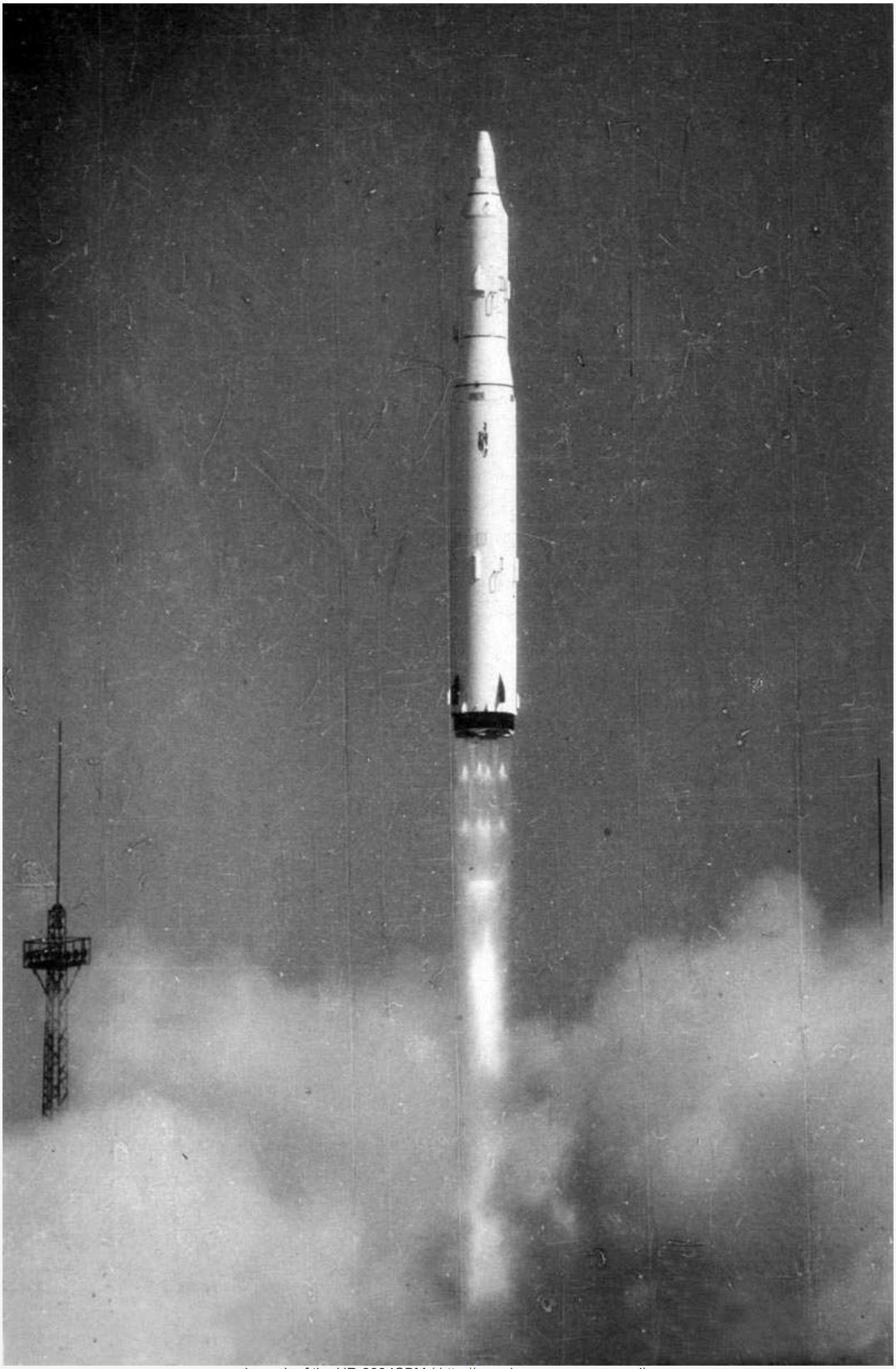
Intercontinental ballistic missile (ICBM) / universal missile - second series. Development of the missile was started by OKB-52 of General Designer V.N. Chelomey in 1960. Development of the missile was carried out at Branch No. 1 of OKB-52 (now KB "Salyut" of FSUE GKNPTs im.V. Khrunichev),

established on October 3, 1960 on the basis of the closed OKB-23 of aircraft designer V. Myasishchev (head of the branch - V. Bugaisky). The official start of the development was given in the Resolution of the Council of Ministers of the USSR No. 258-110 of March 16, 1961 and in the Resolution No. 689-288 of August 1, 1961 (probably on the creation of a system with the anti-satellite spacecraft "IS"). Initially, the missile was called R-200 (source) and was developed as an ICBM and a launch vehicle for spacecraft (in particular, the anti-satellite system "IS"). In May 1961, a preliminary design of the missile was ready. In October 1961, working drawings for the 8K81 launch vehicle were developed (source). The preliminary design of the missile was released in May 1962.

Later, by Resolution of the USSR Council of Ministers No. 243-117 of March 2, 1962, development of a version of the UR-200 was assigned - the UR-200A global orbital missile with two types of warheads - a non-maneuvering ballistic missile and a two-plane maneuvering aeroballistic missile. By Resolution of the USSR Council of Ministers of April 16, 1962 No. 346-160 "On the most important developments in intercontinental ballistic and global missiles and spacecraft carriers" a decision was made to concentrate the efforts and resources of the design bureau, research institutes and industry on the creation, among other models of missile technology, of "the universal UR-200 missile in the version of an intercontinental missile with a ballistic trajectory for transporting a special charge ... and a global version for delivering a special charge to a target ... with the start of flight tests - the fourth quarter of 1963."

In accordance with the aforementioned Decrees, the UR-200 missile was created in the following versions:
- UR-200 - a launch vehicle and an intercontinental ballistic missile;
- UR-200A - an orbital intercontinental (global) missile with a non-maneuvering or maneuvering in the atmosphere warhead. The following versions were also under development as a further development of the UR-200 missile:
- UR-200B - a universal missile with increased energy compared to the UR-200;
- UR-200V - a version of the UR-200 for placement in a silo launcher;
- UR-200UV - a version of the UR-200 for placement in a silo launcher with increased protection.

As a launch vehicle, the UR-200 was supposed to be used to launch into orbit anti-space defense systems (IS spacecraft with a launch mass of up to 1,600 kg into an orbit of 250-300 km) and global maritime reconnaissance satellites (US spacecraft with a launch mass of up to 2,500 kg into an elliptical orbit with an apogee of 264 km). As an ICBM, it was required to ensure the delivery of ballistic unguided warheads to a range of 12,000 (warhead mass up to 2,500 kg) and 14,000 km (warhead mass up to 2,000 kg) with an accuracy of no worse than ±4 km in range and ±3 km in lateral deviation. As a global missile, it was required to ensure the launch of the AB-200 maneuvering aeroballistic warhead into a reference orbit at an altitude of about 150 km.



Launch of the UR-200 ICBM (http://www.buran.ru , processed).

Author: DIMMI Created: 29.01.2013 22:59:32 Comments: 17 READ THE FULL ARTICLE

15P011 / 15A11 Perimeter

DATA AS OF 2022 (in progress)
15P011 Complex, 15A11 Missile
★★★

Command missile of the 15E601 Perimeter system. The complex and missile are used to convey the order of the strategic forces command to units and formations on the use of forces and assets during a nuclear missile attack, when conveying orders by conventional means becomes difficult or impossible. The development of a special command missile for the corresponding Perimeter command complex was assigned to the Yuzhnoye Design Bureau by Resolution of the USSR Council of Ministers No. 695-227 dated August 30, 1974. The lead designer of the missile is V.V. Koshik. The basic missile was initially supposed to be the MR-UR100 / 15A15 ICBM , but later the more advanced MR-UR100UTTH / 15A16 missile was used .

The preliminary design was developed in December 1975. The new part of the ICBM was the special warhead 15B99, which contained a radio-technical system developed by the LPI Design Bureau. To perform its functions, the warhead had to have a constant orientation in space during flight. Accordingly, a system for stabilizing the position of the warhead in space was developed using a compressed air propulsion system as a working element. The experience of work on the 15F678 Mayak controlled warhead, which was developed for the R-36M ICBM, was used . This significantly reduced the cost and time frame

for creating the command warhead. Production of the special 15B99 warheads was organized at NPO Strela in Orenburg, from where the SGCh were delivered directly to the testing ground and later to the Strategic Missile Forces units.

The following enterprises took part in the development of the complex with the command missile:
- KB Yuzhnoye - the lead company for the missile and for the 15V99 special warhead
- NPO Impuls (former OKB LPI, V.I. Melnik) - equipment for the special warhead 15B99
- NPO AP (N.A. Pilyugin) - the missile control system
- KBSM (A.F. Utkin) - launch equipment
- TsKBTM (B.R. Aksyutin) - arsenal equipment
- MNIIS (A.P. Bilenko)
- VNIIS (B.Ya. Osipov)
- TsKB Geofizika (G.F. Ignatyev)
- NII-4 MO (E.B. Volkov)

ICBM MR-UR-100/15A15 in the TPK, Baikonur test site, 2015 (https://myauu.livejournal.com/)

Author: DIMMI Created: 21.12.2022 09:44:54 Comments: 1 READ THE FULL ARTICLE

Sarmat! How much is in this sound

"Sarmat"! How much is in this sound.

An informal look at the program for creating the 15A28 / RS-28 Sarmat heavy liquid intercontinental missile and, at the same time, a few thoughts on the potential of the new ICBM.

So, on the Strategic Missile Forces Day (12/17/2022), we have the following results for the program for creating the new 15A28 Sarmat intercontinental liquid-propellant missile:
- the first and so far the only launch of an ICBM within the framework of flight design tests (FDT) was successfully completed on 04/20/2022;
- at the same time, both at the end of November and on the occasion of the Strategic Missile Forces Day, there were statements in the media that the Sarmat's FDT were proceeding successfully;
- work is underway at the position of the first regiment in the Uzhur area to prepare the infrastructure, but their appearance on satellite images suggests that construction work is unlikely to be completed before 2023, although the silos may be ready to accept missiles for the sake of accepting missiles in December 2022 (I don't know what the point is if there is no other infrastructure).

At the same time, it is highly likely that 3-4 missiles were launched for the LKI - even if we remember how many TPKs we saw in the Krasmash workshops in various news stories. Well, at least three launches would probably be close to what can be called the "first stage of the LKI".

In general, I think that the real deployment of the new ICBM will probably begin in 2024-2025. And now there will be games around the LKI, reports and saving heads and ranks.

The first launch of flight design tests of the 15A28 Sarmat heavy liquid-propellant ICBM, 04/20/2022, Plesetsk test site.

Author: DIMMI Created: 29.11.2022 17:23:28 Comments: 0 READ THE FULL ARTICLE

RS-26 Rubezh / Avangard - KY-26 / SS-X-31 complex

DATA AS OF 2019 (standard replenishment)
RS-26 Rubezh / Avangard / Avangard-R / Avangard-Rubezh complex, 15Zh67 - KY-26 / SS-X-31 missile
★★★

Strategic missile system with an intercontinental ballistic missile of increased firing accuracy / with a small-sized ICBM. The complex is being developed by the Moscow Institute of Thermal Engineering (MIT), the chief designer is probably Yu.S. Solomonov . The development of the complex within the framework of the Avangard program for the Rubezh R&D began no later than 2006. In the period from 2006 to 2009, research on the Rubezh topic was conducted by national research universities. In 2008, the Minsk Wheel Tractor Plant delivered a set of documentation (technical design) to MIT on the MZKT-79291 chassis in a modern version for the APU of the prospective PGRK, and MIT conducted related R&D with MZKT (source). According to an interview with Yu.S. Solomonov dated 17.03.2011, the development of the complex will be completed by 2013.

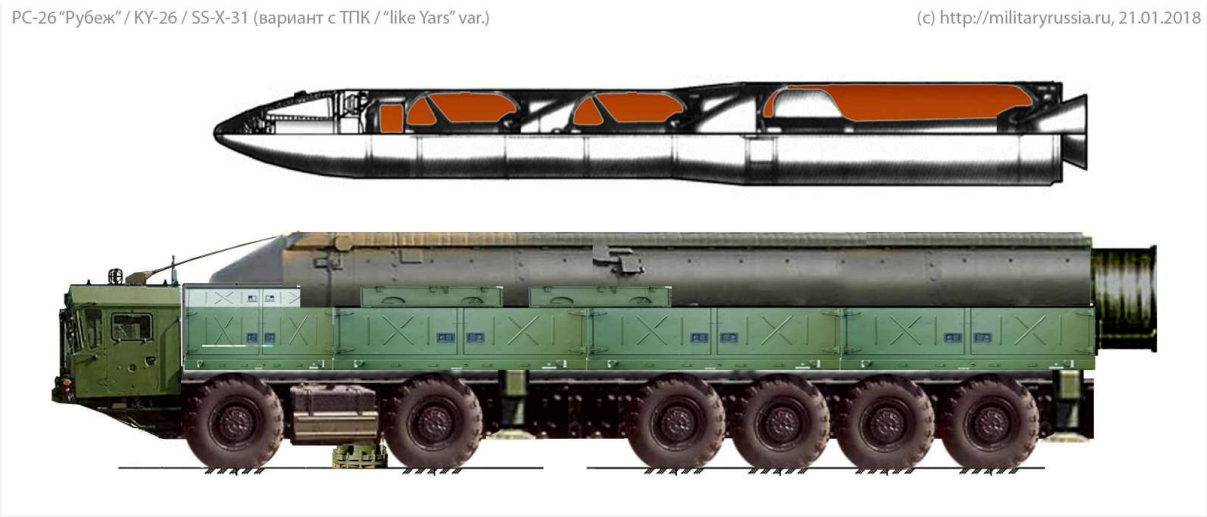
The first test launch of the complex was expected in 2011 and most likely ended in an accident on 27.09.2011. There is also a hypothesis that the first launch was a throw-in to test an autonomous launcher of a new type and was in fact quite successful. The second launch in general and the first ballistic launch took place from the Plesetsk test site from a mobile launcher on May 23, 2012. The training warhead arrived in the designated area of the Kura test site in Kamchatka. The third launch was successfully carried out from the Kapustin Yar test site on October 24, 2012, at the Sary-Shagan test site, and, probably, during this launch, the anti-missile capabilities of the new missile's warhead were assessed. The second such and the fourth launch overall was carried out on June 6, 2013. Some media outlets reported on tests of the MIRV type warhead, which may be a mistake.

According to the media, the complex is planned to be accepted into service by the end of 2013. The deployment of the first missile regiment is planned for 2014. Also, starting in 2014, the missile of the new complex will be serially produced by the Votkinsk Machine-Building Plant. On December 14, 2012, the Commander-in-Chief of the Strategic Missile Forces, Colonel General Sergei Karakayev, told the media that in the future, the new missile will replace the Topol-M and Yars ICBMs.

The name of the complex (or missile) "Avangard" was first mentioned in an interview with the Minister of Defense of Russia A. Serdyukov on July 1, 2011 in the context of a threefold increase in the supply of strategic missiles to the Strategic Missile Forces during 2011-2015. The complex differs from previous generations of complexes by significantly increased capabilities of combat control and communications (*interview with Yu. S. Solomonov on March 17, 2011, possibly referring to the "Yars-M" complex*), as well as, probably, the use of a new type of fuel in the rocket stages, accelerating the passage of the active section of the trajectory (source).

In the statementAccording to the media of the consultant of the Commander of the Strategic Missile Forces Colonel General Viktor Yesin from 21.07.2015, the missile complex with the RS-26 ICBM, also known as "Rubezh", was named "Yars-M".

The data are partly of a hypothetical nature, the conclusions are based on information from the specified open sources. According to one version, the name "Avangard" refers to the missile of the complex.



A variant of the supposed appearance of the APU of the RS-26 Rubezh missile system with the supposed type of missile - based on the RS-24 Yars missile system (MilitaryRussia.Ru , variant from 21.01.2018)

Author: DIMMI Created: 05.07.2011 22:03:35 Comments: 1282 READ THE FULL ARTICLE

15П175 Siren, rocket 15У75 - SS-25 SICKLE

DATA AS OF 2022 (standard replenishment)
15P175 Sirena complex, 15U75 / 15Zh75 missile - SS-25 SICKLE
★★★

Intercontinental ballistic missile (ICBM) of the 15E601 Perimeter-RTs command missile complex. The complex was developed by the Moscow Institute of Thermal Engineering (MIT) based on the RS-12M Topol missile complex .

The purpose of the Perimeter-RTs system: transmitting an order to use nuclear weapons to command posts of units and formations of the Strategic Missile Forces and other types of strategic nuclear forces, launchers and nuclear-powered submarines. It is envisaged that the system will be used as an alternative channel for transmitting orders in the event of a disruption of regular communications. Upon order from the relevant command, a missile is launched, which, while flying over the country's territory, transmits the corresponding code signals on the radio.

Some sources report that the system is fully automated to ensure guaranteed completion of its mission. I believe that this is fundamentally at odds with the military's attitude to decision-making automation that has developed in the USSR and Russia - a person or even a group of people must always make a decision. The USSR would not have dared to entrust such an important decision to computers.

The first version of the Perimeter system with the 15A11 command missile was accepted into service in the first half of the 1980s.

Tests of the 15Yu75 command ICBM began at Site 169 of the Plesetsk test site on August 8, 1990, and were completed by the end of 1990. A total of four ICBM launches were performed during the tests. The first and only regiment in the Strategic Missile Forces equipped with the Sirena PGRK took up combat duty in December 1990 in the 8th Missile Division of the Strategic Missile Forces (Yurya, regiment commander - Colonel S. I. Arzamastsev).

In December 2011, the Commander of the Strategic Missile Forces, Lieutenant General Sergei Karakayev, stated that the Perimeter system exists and is on combat duty (source). It is believed that from 1995 to 2005, at a minimum, the complex was not on combat duty. In 2005, missile regiments No. 76, 304 and 776, removed from combat duty, were concentrated at the 3rd site of the 8th missile division, each with 3 SPUs of the complex (source).

SPU 15U128.1 on the MAZ-7912 chassis with TPK - "Topol" complex (official photo from documents on OSV agreements, http://www.fas.org).

Author: DIMMI Created: 15.02.2019 23:29:10 Comments: 1 READ THE FULL ARTICLE

15P157 Pioneer-3, missile 15Zh57 - SS-X-28 SABER

DATA FOR 2022 (standard update)
Complex 15P157 "Pioneer-3", missile 15Zh57 - SS-20 SABER mod.3 / SS-X-28 SABER
Complex "Pioneer-4"
★★★

Mobile ground-based missile system (PGRK) with a medium-range ballistic missile (MRBM). The system and missile were developed on the basis of the 15P653 Pioneer-UTTKh system with the 15Zh53 missile, with possible unification with the PGKR ICBM Topol . The development of a modification of the Pioneer system was determined by the US plans to deploy a theater missile defense system in Europe based on the Patriot SAM system. To successfully overcome such missile defense systems, it was assumed that more advanced small-sized and light warheads with a lower radar signature would be used. At the same time, it was possible to increase the number of warheads to four. The development was carried out by the Moscow Institute of Thermal Engineering (MIT) under the general supervision of A.D. Nadiradze on the basis of the Resolution of the CPSU Central Committee and the USSR Council of Ministers dated November 12, 1979, No. 1011-289.

The development of the project showed that such a number of warheads was excessive for a medium-range missile. There was also a need to further increase the warhead deployment zone and allocate mass-energy reserves for the implementation of measures to counter the missile defense system. Resolution of the Central Committee of the CPSU and the Council of Ministers of the USSR No. 300-120 of April 6, 1983 established a three-block equipment for the Pioneer-3 MRBM.

Cooperation of developers:
- MIT - the lead developer of the complex, development of the missile
- TsKB Titan (Volgograd) - SPU and support vehicles of the complex
- Design Bureau of the Minsk Automobile Plant (Minsk) - SPU chassis
- LNPO Soyuz (Lyubertsy) - charges of sustainer solid propellant rocket motors from composite fuel
- NPO Avtomatiki i Priborostroeniya (Moscow) - control system of the complex
- KB-1 VNIIEF - developer of combat equipment of the 15Zh53 missiles

The new missile 15Zh57 was created with a high degree of unification of the sustainer stages with the 1st and 2nd stages of the 15Zh58 ICBM PGRK Topol. The breeding stage and combat equipment were developed specifically for the new modification of the Pioneer.

SPU complex 15P157 "Pioneer-3" (http://www.russianarms.ru/ , processed).

Author: DIMMI Created: 29.05.2015 22:29:11 Comments: 4 READ THE FULL ARTICLE

Complex 9K71 Temp, missile 9M71 - SS-12 SCALEBOARD

DATA FOR 2022 (standard update)
Complex 9K71 "Temp", missile 9M71 / 9M72 - SS-12 SCALEBOARD / KY-06

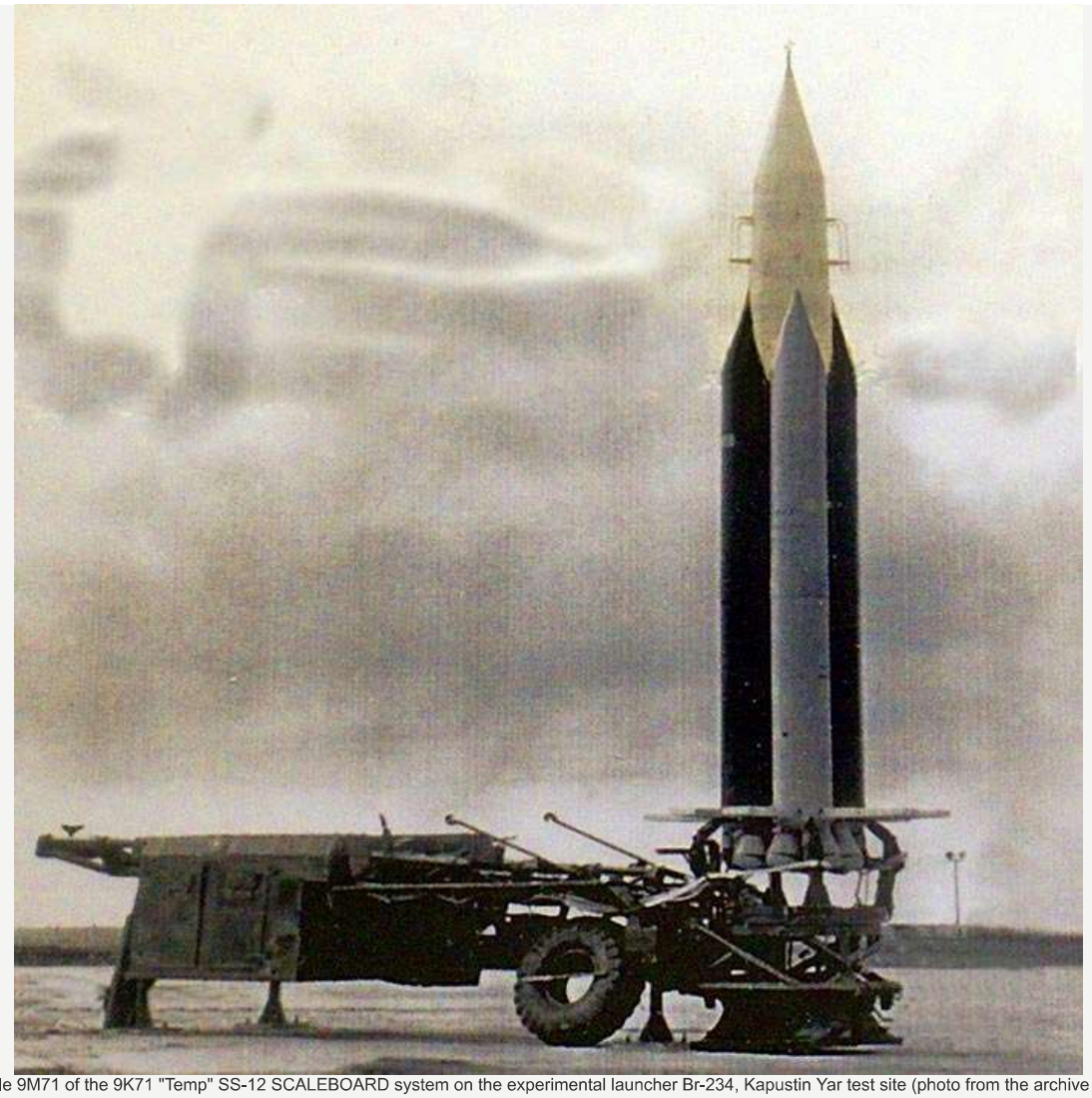
The Frontline Ballistic Missile (Operational-tactical Missile) is a solid-fuel missile created to replace the 8K14 liquid-fueled missiles with a detachable warhead containing a nuclear charge. Development of the missile was initiated by Resolution of the USSR Council of Ministers No. 839-379 of July 21, 1959. The complex and the missile were developed by NII-1 (later renamed the Moscow Institute of Thermal Engineering), chief designer A.D. Nadiradze. The ground-based launch equipment was developed by the design bureau of Plant No. 221 "Barrikady". Development of the Br-225 launcher was initiated on February 14, 1959, the draft design was ready in April 1960, and the prototype was manufactured in 1961-1962.

The missiles were manufactured at Plant No. 235 in Votkinsk.

The first stage of flight design tests (the main objective was to check the practical feasibility of creating an operational missile defense system using solid-propellant rocket motors) was conducted at the Kapustin Yar test site from April 14 to August 15, 1961, using the Br-234 test site launcher (manufactured by the Barrikady plant). The first launch of the Temp missile was on May 20, 1961. Two more launches were made as part of the first stage of testing. The second stage of testing (the main objective was to refine the system and test it for compliance with the performance specifications; 12 missiles were tested) lasted from October 1961 to July 1963. Three launches were made from the standard Br-225 launcher from January to May 1962. In the summer of 1962, the missile was modified to increase its range to 460 km and reduce warhead oscillations in free flight, which led to undershoots. Serial production of the missiles was supposed to begin in 1963. Tests of the modified Temp missile began in December 1962. Of the 12 launches, 6 missiles were destroyed on the trajectory, and the flight results of the rest did not meet the requirements for the creation of the complex, but the last 4 launches took place without incidents (*source - Veselovsky*).

The work was stopped by the decree of the USSR Council of Ministers No. 800-273 of July 16, 1963 "Due to the delay in the flight design tests and insufficiently high technical characteristics of the product."

Special thanks to users "Sluchayny" and "binladin" from the forum http://militaryrussia.ru for unique photo materials.



Missile 9M71 of the 9K71 "Temp" SS-12 SCALEBOARD system on the experimental launcher Br-234, Kapustin Yar test site (photo from the archive of the user "Sluchany", http://militaryrussia.ru/forum , published 30.06.2011).

Author: DIMMI Created: 29.03.2009 00:35:47 Comments: 42 READ THE FULL ARTICLE

9K77 Record, 9M77 missile - SS-1D SCUD-C / KY-03

DATA AS OF 2022 (standard replenishment)
Complex 9K77 "Rekord", missile R-17M / 9M77 - SS-1D SCUD-C / KY-03
★★

Project of an operational-tactical missile with an increased flight range. The development of a variant of the R-17/8K14 missile with increased fuel tanks and a flight range of 500 km was carried out on an initiative basis by OKB-235 (Votkinsk Machine-Building Plant Design Bureau) under the leadership of Evgeny Dmitrievich Rakov. The development was carried out under the code ROC "Record" in 1964-1968. Since the plant's design bureau had no experience in independent development, technical management of the project was assigned to SKB-385 (V.P. Makeyev) for the missile and to SKB-626 (N.A. Semikhatov) for the control system. The proposal to create the missile was considered by the Military-Industrial Complex under the USSR Council of Ministers and development was initiated by the Resolution of the USSR Council of Ministers of March 1963.

Flight design tests of the 9K77 missile system were conducted at the Kapustin Yar test site from April 1964 to 1967. The Chairman of the State Commission was Colonel General I. I. Volkotrubenko. The tests were not very successful, but the last four launches were successful and a total of 5 successful launches were conducted under the flight design program. According to the recollections of one of the veterans of the Kapustin Yar test site, A. N. Zakharov (source), the increased dimensions of the missile could not withstand the overloads that occurred when the missile entered the dense layers of the atmosphere, and the missile was destroyed in flight.

In connection with the creation of the operational-tactical missile on solid fuel "Temp-S" NII-1 (future MIT) with a flight range of up to 900 km, work on the R-17M complex was stopped. Later, due to disagreements with the director of plant No. 235 V.G. Sadovnikov, presumably not without the participation of A.D. Nadiradze - a competitor of the 9M77 project - the chief designer of the missile and the complex E.D. Rakov was removed from development and soon fired (*source - Karpenko*).

The missile was identified by the US Department of Defense as KY-03 based on satellite images.

Author: DIMMI Created: 24.10.2022 20:28:22 Comments: 1 READ THE FULL ARTICLE

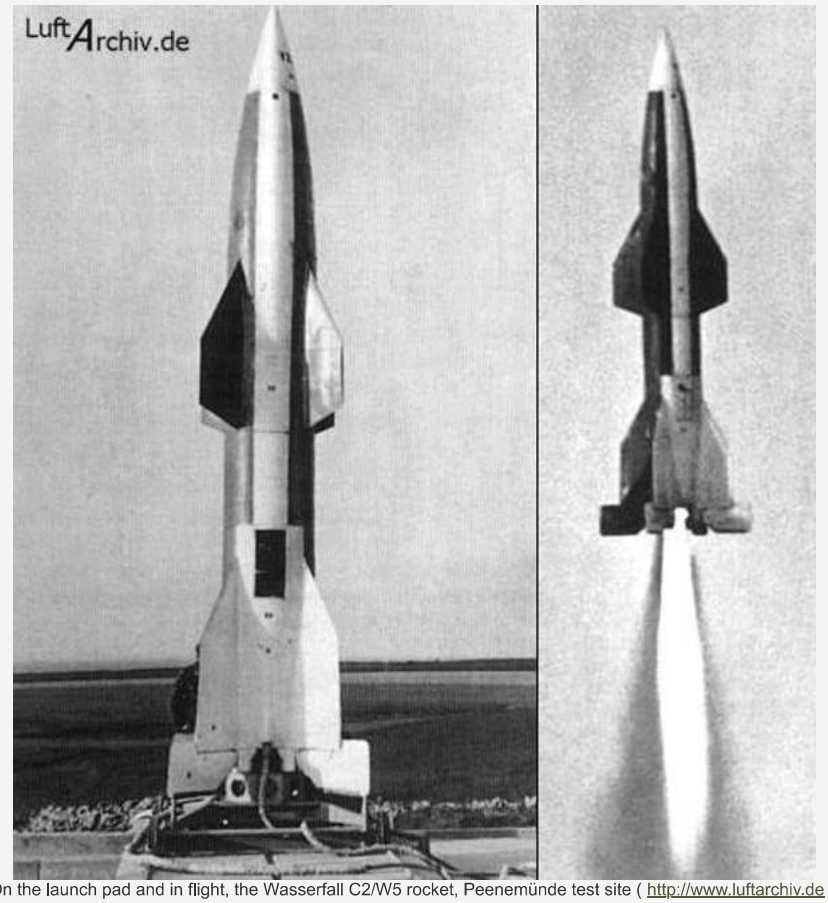
Wasserfall / P-101

DATA AS OF 2022 (standard replenishment)
Wasserfall C2 W1 / W5 / W10
R-101 / R-101B / R-102
★★★★

Surface-to-air missile / ballistic missile / Navy ballistic missile. After the end of the Great Patriotic War, on May 13, 1946, the USSR Council of Ministers adopted Resolution No. 1017-419 "Questions of Rocket Armament". This Resolution for 1946-1948 set the tasks of complete restoration of technical documentation and samples of German anti-aircraft guided missiles; restoration of laboratories and stands with all the equipment and devices necessary for conducting research and experiments on Wasserfall missiles; training of Soviet specialists who would master the design of missiles, testing methods, technology for the production of parts and components and assembly of missiles. Work on captured Wasserfall anti-aircraft missiles under the index R-101

was carried out by Department No. 4 of the Special Design Bureau of the Scientific Research Institute-88 (future OKB-1 of the Scientific Research Institute-88), chief designer - E.V. Sinilshchikov.

The Wasserfall C2 guided anti-aircraft missile was created in Germany under the general supervision of Werner von Braun using the technological achievements of the V-2 project, chief designer - Walter Dornberger. The development of the SAM concept began in 1941. The contract for the creation of the missile was concluded on November 2, 1942. At the same time, requirements for the missile were issued. It was planned to ensure the probability of hitting bomber-type targets of at least 50%. Technical design was carried out in 1943. The first (unsuccessful) launch of the missile took place on February 29, 1944. At the same time, preparations for serial production of the missile began, but serial production was never established by the end of the war, although it was planned to produce 5,000 missiles. The first modifications of the W1 and W5 missiles differ significantly in size and performance characteristics from the last modification W10. In March 1945, during tests, the missile reached an altitude of 16 km and showed a speed of 780 m/s. Data on the possible combat use of the Wasserfall SAM is most likely incorrect. Some researchers believe that no more than 50 missiles were launched in total (*source - Burgess E.*), others (*source - Book on 658 ZRP*) report that protocols of 40 experimental missile launches were discovered, of which only 14 were successful.



On the launch pad and in flight, the Wasserfall C2/W5 rocket, Peenemünde test site (http://www.luftarchiv.de).

Author: DIMMI Created: 13.01.2013 10:16:41 Comments: 10 READ THE FULL ARTICLE

UR-500 / 8K82 Proton - SL-9

DATA AS OF 2022 (standard replenishment)
K8K82 complex, UR-500 / 8K82 Proton missile - SL-9
★★★★

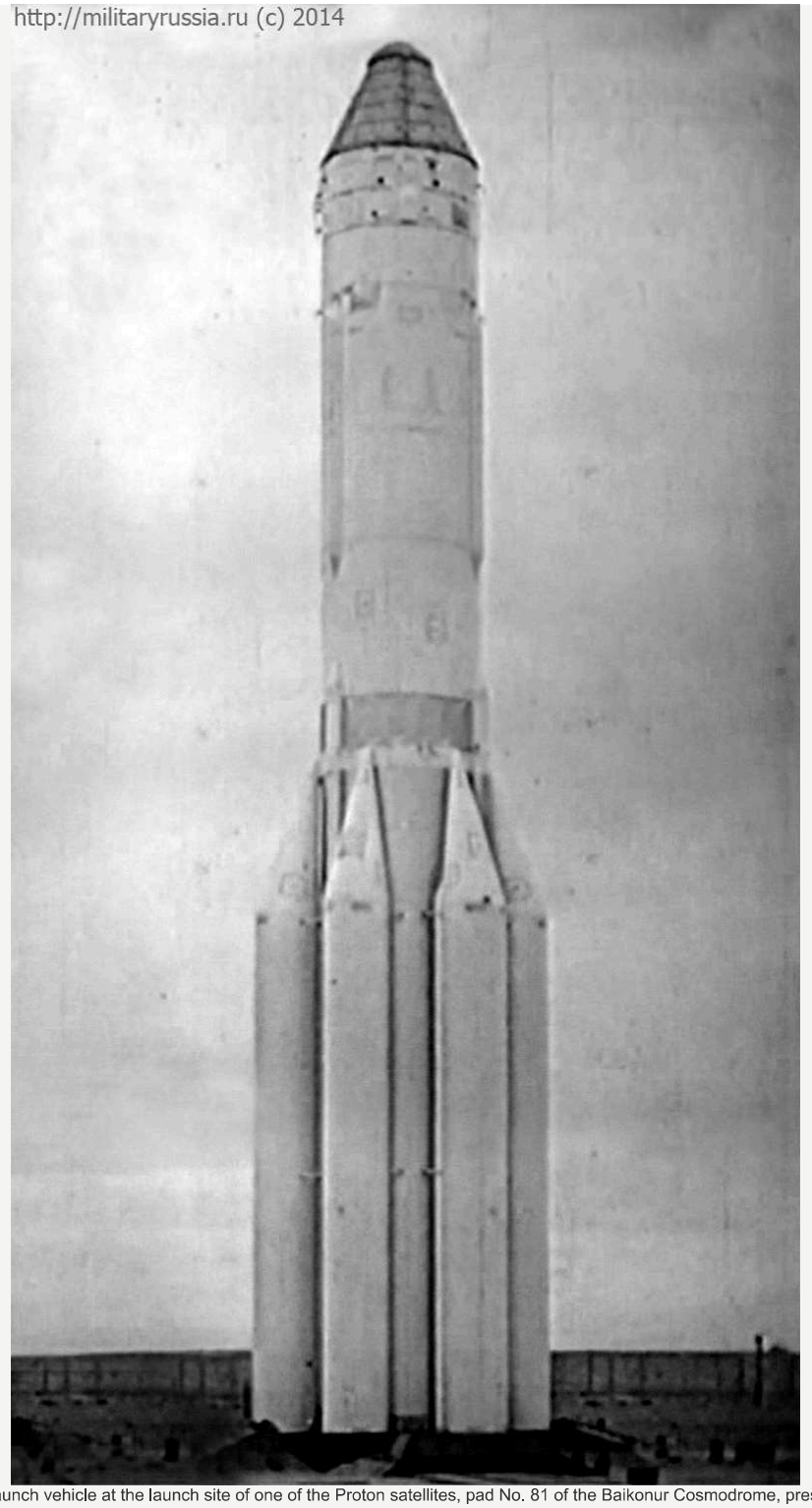
Heavy-class intercontinental ballistic missile (ICBM). Development of the missile was started by OKB-52 of General Designer V.N.Chelomey on its own initiative in the spring of 1961. The official decision to develop the missile was made by Resolution of the Central Committee of the CPSU and the Council of Ministers of the USSR No. 409-183 of April 24, 1962. The tactical and technical requirements for the missile were adopted by the USSR Ministry of Defense by decision No. T726 of January 17, 1963. The chief leading designer of the UR-500 project at the first stage was P.A.Ivensen. Since 1962, the chief designer of the project is Yu.N.Trufanov. At the design stage, D.A. Polukhin (later appointed chief leading designer of the project), V.K. Karrask, G.D. Dermichev, V.A. Vyrodov, E.T. Radchenko, E.S. Kulaga, N.N. Mirkin, Yu.P. Kolosnov, V.F. Gusev and A.T. Tarasov took direct part in determining the technical parameters of the rocket.

Development of the rocket project began in the second half of 1961 on the initiative of V. Chelomey. Development of the rocket project was specified in three versions:
- heavy-class intercontinental ballistic missile;
- global rocket;
- launch vehicle for spacecraft weighing 12-13 tons;

At the initial stage of development, the project went through several significantly different versions of the rocket layout (see Modifications). As a result, in January 1962, the scheme with a package layout of the first stage was selected for revision. On April 24, 1962, the USSR Council of Ministers issued a Resolution (see above) on the development of the UR-500 missile with the final layout of the first stage. In May 1962, a preliminary design for the UR-500 missile was released based on this version. The preliminary design for the UR-500 missile was completed in 1963. The design of the UR-500 as a whole was completed by the end of 1964.

In 1962, NII-1011 (now VNIITF) began developing a munition with a 100-megaton charge developed by KB-11 (VNIIEF) for an ICBM based on the UR-500 (source). The development was brought to the preliminary design and assembly of a design model. In 1963, NII-1011 also developed munitions for unguided and guided orbital modifications of ICBMs. In the mid-1960s, work on heavy ICBMs in OKB-52 and related organizations developing warheads ceased.

After October 1964, in connection with the dismissal of N.S. Khrushchev, the UR-500 project was revised and development of the combat version of the missile was terminated. Only the launch vehicle for spacecraft remained in development.



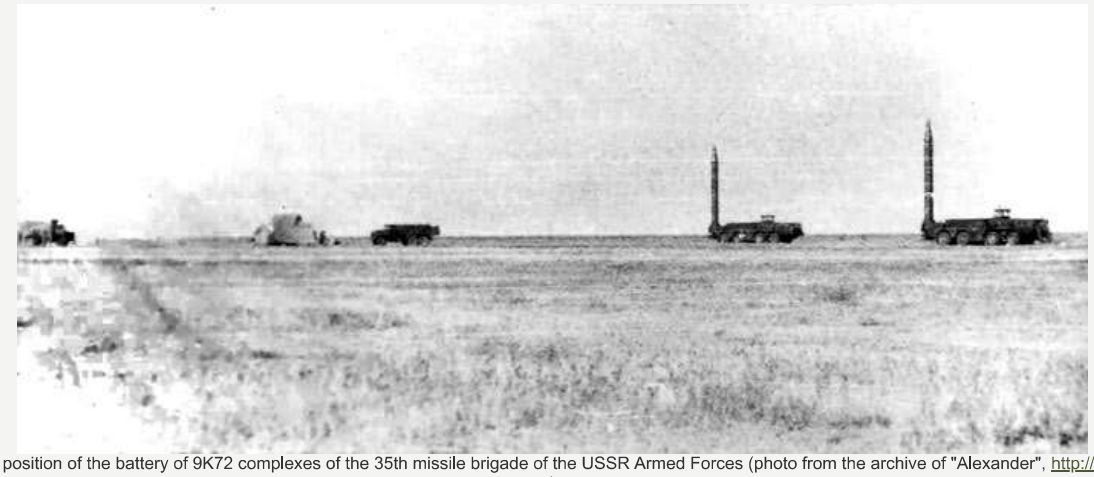
The UR-500/8K82 launch vehicle at the launch site of one of the Proton satellites, pad No. 81 of the Baikonur Cosmodrome, presumably 16.07.1965 (reconstruction of a photo based on newsreel footage, http://militaryrussia.ru , April 2014).

Author: DIMMI Created: 03.04.2014 00:54:29 Comments: 18 READ THE FULL ARTICLE

9K72 / R-17 - SS-1C/D/E SCUD-B/C/D - complex infrastructure, projections

DATA AS OF 2012 (standard replenishment)
9K72 / R-17 - SS-1C/D/E SCUD-B/C/D - complex infrastructure, projections
9K72 / R-17 - SS-1C/D/E SCUD-B/C/D
9K72 / R-17 - SS-1C/D/E SCUD-B/C/D - status, export, sources
★★★★★

A missile division of 9K72 systems with 2P19 SPUs during a night launch, 1970 (photo from Rybakov's archive, http://9k72.ru , TASS)



At the position of the battery of 9K72 complexes of the 35th missile brigade of the USSR Armed Forces (photo from the archive of "Alexander", http://9k72.ru)

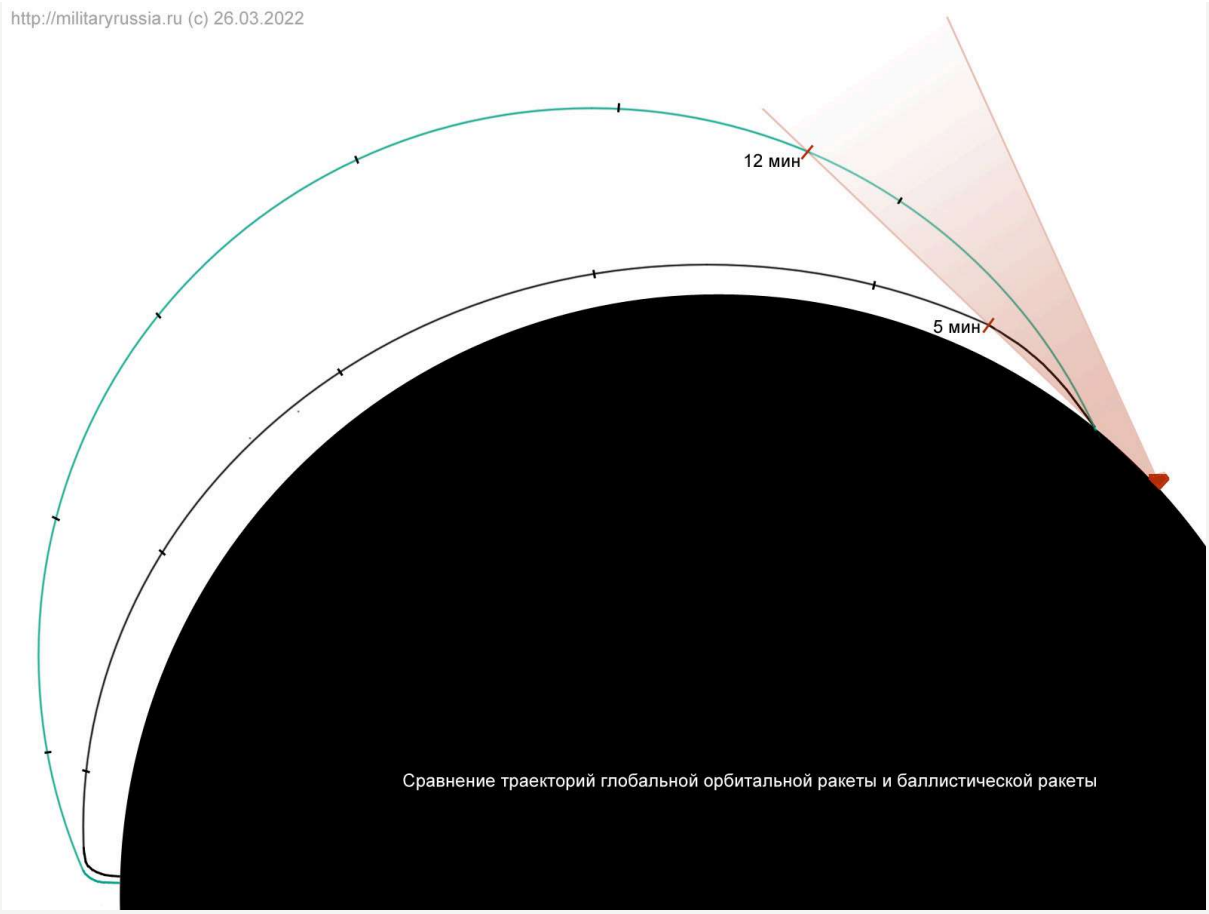
Author: DIMMI Created: 22.11.2009 21:09:15 Comments: 41 READ THE FULL ARTICLE

Global vs. Intercontinental

Global vs. Intercontinental

There is an opinion that global ballistic missiles have certain advantages over conventional ballistic missiles. I would like to understand whether this is true or not and in what situations these advantages can really be useful.

The first global missile to fly and be in service was the Soviet R-36-O - the same one that was called "partial orbital bombing system" (FOBS) in the West . With its introduction into service, the main advantages of this type of missiles became clear:
- unlimited range;
- the ability to hit a target with different missiles, but simultaneously from different directions (for example, through the North and South Poles);
- shorter flight time to the target in the shortest direction than a conventional ICBM;
- the impossibility of predicting the area where the warhead will fall while it is in the orbital portion of the flight;
- satisfactory accuracy at maximum range.



Author: DIMMI Created: 24.03.2022 17:33:50 Comments: 0 READ THE FULL ARTICLE

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